

Total Door Leapfrogs Their Competition Using UV Technology

Total Door is known for making more than just doors. They make Total Door Systems. Now, with the help of some innovative, hardworking UV suppliers, Total Door continues to break new ground in door manufacturing—making this cutting-edge company even better.



The Total Door story began in the 1950s, when founders Leon and Christine Yulkowski created the first American mortise lock designed specifically for levers. It was a revolutionary design that became the industry standard and is still widely used today. The Yulkowskis' first company, General Lock, grew rapidly until it was purchased by Schlage in 1972.

After the sale of General Lock, the Yulkowskis used their unique approach to create an entirely new kind of door. Instead of looking at an opening as a collection of separate parts from dozens of different manufacturers, the Yulkowskis looked at each door as a unified system. They engineered a system comprised of custom components. This strategy led to the creation of Total Door—and the creation of an entirely new category of opening systems.

Today, Total Door supplies complete commercial door systems to a literal “who’s who” in the healthcare, education, government, office, retail, hotels and other industries. The door systems can be installed in new construction or existing openings.

“We create complete, opening-ready door solutions. Everything—from light kits to hinges to locking mechanisms—is designed to be the best possible answer to a specific need,” said Patricia Yulkowski, CEO of Total Door. “It all results in fewer moving parts, reduced



Total Door's manufacturing floor with a UV coating and curing system.

maintenance costs, simpler installation, unbeatable reliability, unmatched security, and lower up-front costs.”

That commitment to quality and innovation is what led Total Door to look for new processes to meet the current and future needs of their customers. Their research led them to look at replacing their solvent-based system with a UV coating technology that could increase production capabilities, improve quality and provide a safer work environment for employees.

Switching to UV Coating Technology

In 2009, Total Door decided to make a big change—switching from a solvent-based coating to UV coating technology. The move to UV was a major part of the company's green strategy. During their research phase, however, Total Door was told by key suppliers that UV technology wouldn't work with their processes. “They said there was no way to cure UV coating on complicated shapes,” said Yulkowski. “We were told that we couldn't mount UV lamps horizontally and on reciprocators.”

Two UV providers disagreed. Allied Photochemical, a Michigan-based UV technology company, teamed with Fusion UV Systems, a UV equipment supplier, to find a solution for Total Door's UV-curing needs. “The proposed process was fairly sophisticated and did contain some risks,” said Dan Sweetwood, president and CEO of Allied PhotoChemical. “But after our first meeting with Patricia, it was clear to us that she was committed to the benefits of the UV process. That played a huge role in our decision to back the project and partner with Total Door.”

Allied Photochemical provided the UV-curable paint formulation that can be cured instantly by the Fusion's UV system. “When the door passes in front of reciprocators holding Fusion modular 10-inch curing heads on each side of the door, the UV lamps deliver UV energy to cure the solventless paint,” said Chris Brandl, sales manager, Midwest region, for Fusion UV Systems Inc. “The results are incredible—instant cure, low heat and virtually no VOC emissions.”

This critical new step in the final production process has streamlined

Total Door's manufacturing process. Now, when the door moves down the finishing line to the coating application, the door body is coated using an electrostatic spray application process. This process adds a scratch- and abrasion-resistant coating to the door and is cured using a system of multiple Fusion 10-inch UV curing systems to cure both sides of the door. “They had to create a special dual-cure for



Dual-cure UV lamps on reciprocators.



Hospital door system.

us,” said Yulkowski. “This allows the coating in the recessed areas to cure.”

It was a lot of work, taking up to two years, not including lab time and seven months of setup. “Why did we do it?” said Yulkowski. “Because it’s the right thing to do. And it’s a good long-term financial decision.”

Total Door’s decision to move from solvent-based coating to UV coating technology was based on the “sustainability” of the technology. UV coating offered some key attributes:

- faster production speed
- reduced work-in-process
- reduced manufacturing footprint
- reduced energy costs
- reduced quality costs
- Cleaner (lower VOCs and HAPs)/ cleaner and safer work environment

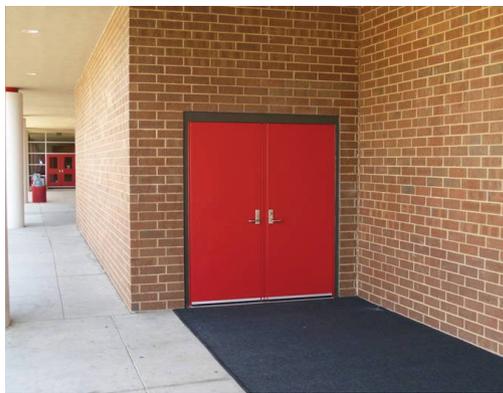
“Our decision to move from solvent-based coating to UV coating technology was a significant step in our goal to implement sustainable technology into every part of our manufacturing process,” said Yulkowski.

Total Door began the switch over when it moved its operations into a newly refurbished, state-of-the-art, 63,000-square-foot facility in Waterford, Mich., in October 2010. Now all the processes are on one floor. Total Door’s previous location was a 75,000-square-foot facility that had been an old automobile plant,

with employees working on multiple floors.

Within the new facility, Total Door was able to continue their old coating process while fine-tuning the new UV system. And, as the new system was ramped up and tweaked, the UV coating process was proving its mettle as a “sustainable” technology—delivering on its “green” promises.

From a production standpoint, the UV coating technology consumes a great deal less floor space, mainly by reducing or eliminating conventional ovens and conveyors. The new



Flush exterior door.

system also enables the company to run its door manufacturing process at a higher line speed—which offers them more production capacity and flexibility. With a cure time of less than two seconds, the UV coating process offers many benefits—from immediate handling to reduced quality costs. Also, work-in-process is virtually eliminated. With all these reductions, energy costs are also reduced.

Another focus for Total Door was the overall quality and the costs associated with quality. “Now we are getting double the transfer efficiency,” adds Yulkowski. “Work-in-process has gone from 24 hours to 20 minutes which has more than doubled our throughput capacity.”

In addition, the ability to immediately inspect UV-coated cured parts is critical to Total Door’s goal to continually reduce quality defects. The UV paint process delivers this capability.

The sustainability of UV coating technology also offers Total Door a means to greatly reduce its VOC emissions, as most UV coatings contain no VOCs or HAPs. Now, 25% of their material is recycled and they have greatly reduced the amount of VOCs they use. It’s a much greener process and makes for a cleaner and safer work environment.

“Our partners helped us prove that not only could we achieve this process

but we could succeed at it and continue to leapfrog the competition,” adds Yulkowski. “Now we use less space, less energy, have fewer rejects and lower costs.”

Total Door’s next goal? In six months they want to be completely UV, including the addition of onsite custom color matching. “It’s been a huge investment for us and for the suppliers,” adds Yulkowski. “But it’s going to pay off in the end.” ▶